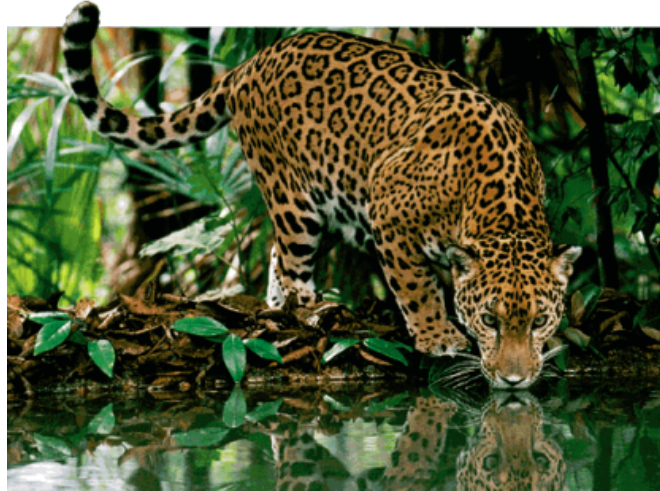


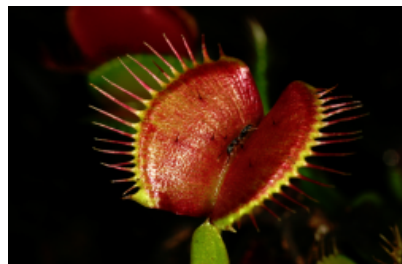
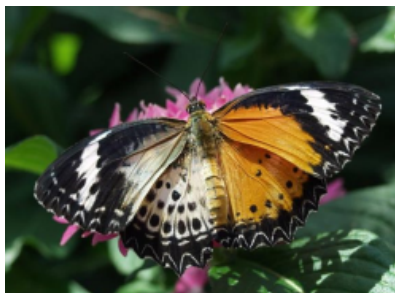
What is Ecology?

Study of interactions of organisms and between organisms and their environment.

involves the study of both abiotic and biotic factors in the environment.



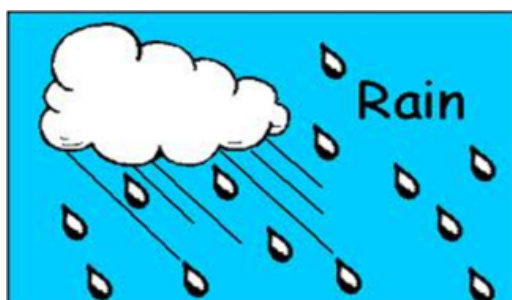
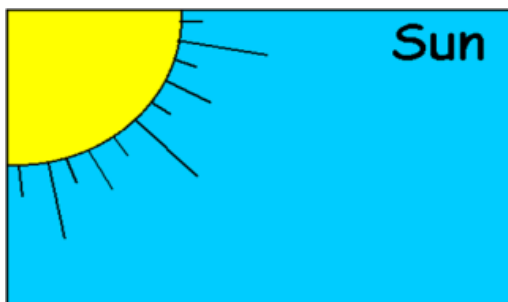
Biotic factors – all of the living organisms that inhabit an environment.



Abiotic factors – all of the nonliving parts of the environment such as, air currents, temperature, moisture, light, minerals in the soil, topography, etc.



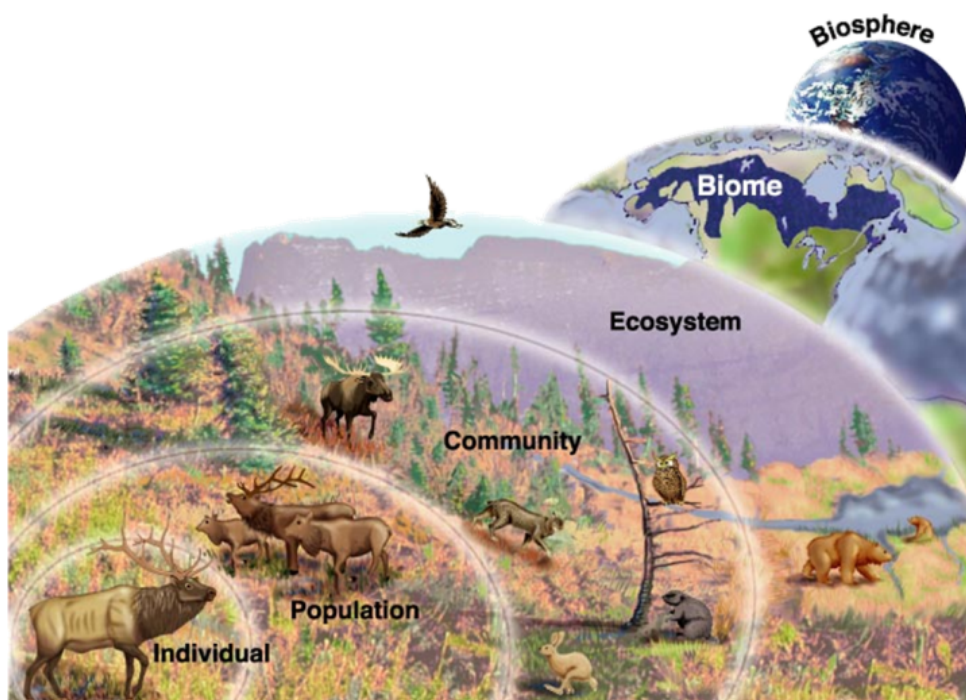
Biotic or Abiotic?



Biotic or Abiotic?



Ecology Levels of Organization



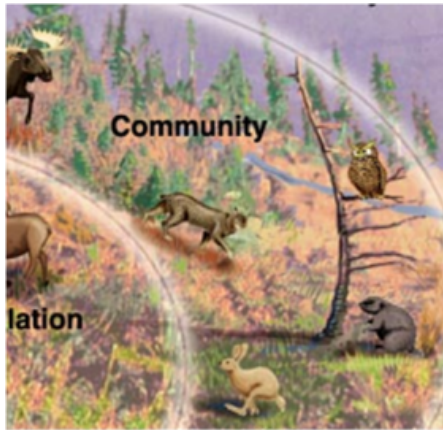
A **species** is a group of organisms that can breed and produce fertile offspring. (ex: black bears)



A **population** is a group of one species living in a specific area. (ex: all the black bears in Yellowstone Park)



A **community** is all the living things in an area (ex: all the black bears and wolves living in Yellowstone)

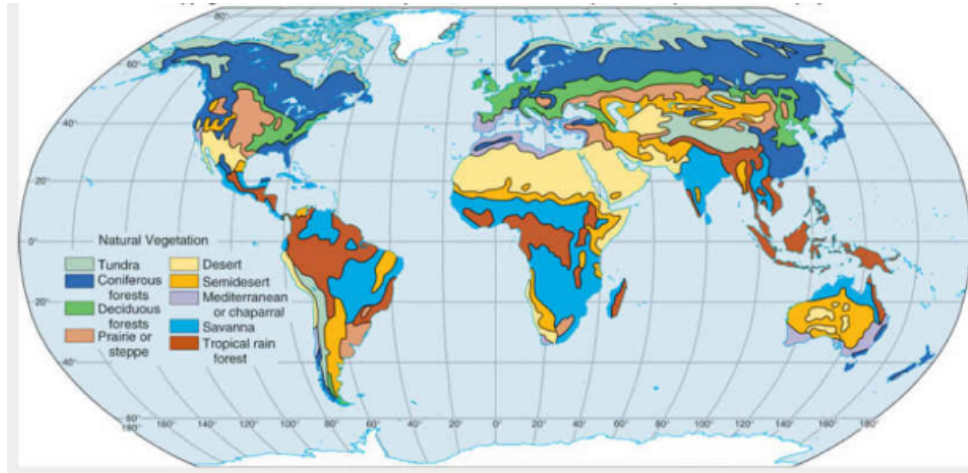


Video

An **ecosystem** is all the living things in one place plus the non-living factors.



A biome is a group of ecosystems that have the same climate and dominant communities.



A biosphere is the parts of the earth in which life exists, including land, water, air and atmosphere.



The Niche

An animal's niche is the full range of physical and biological conditions in which an organism lives and the way in which it uses those conditions. - what it needs to survive



The Niche

A organisms niche includes

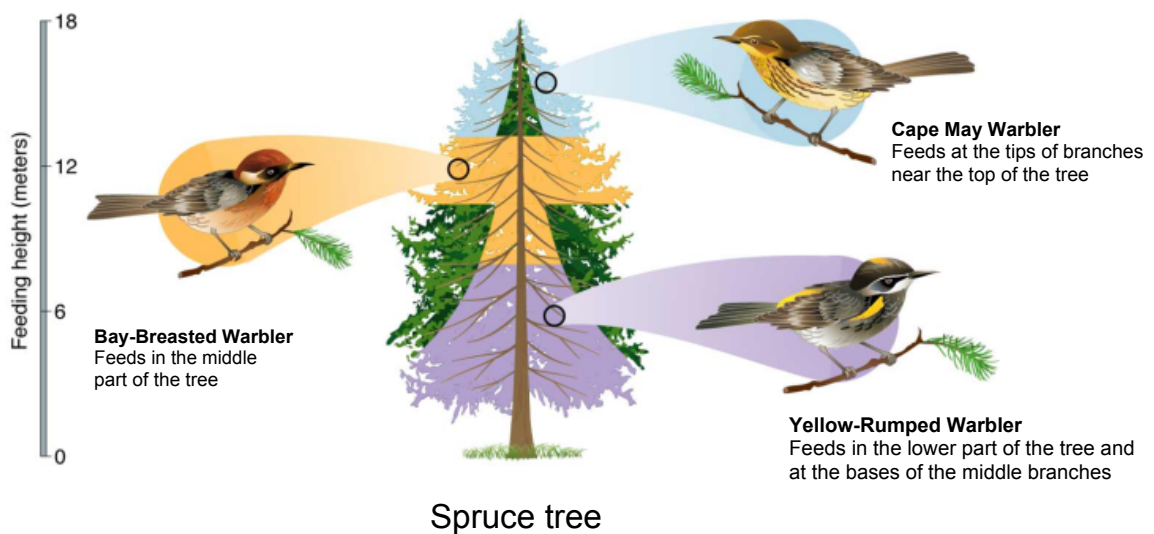
- the type of food it consumes
- how it obtains food
- physical conditions necessary to survive
- the organism's reproductive pattern

Niche v. Habitat

An organisms habitat is where it lives

An organisms niche is how it lives

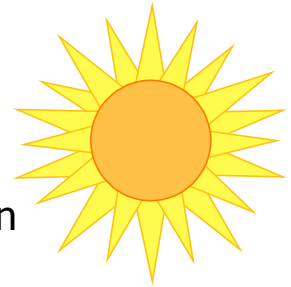
No two species can share the same niche in the same habitat.



Energy Flow

The center of every organisms interaction with the environment is its need for energy.

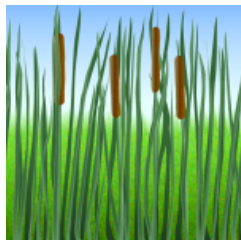
Sunlight is the main source of energy for life on Earth.



→ Energy flows through an ecosystem in one direction, from the sun to autotrophs (producers) and then to various heterotrophs (consumers).

Producers

Autotrophs - Capture energy from sunlight or chemicals and use to produce food.



Photosynthesis – use light energy. Is the main source of energy for life.

Chemosynthesis – use chemical energy-
make food from inorganic chemicals



Consumers

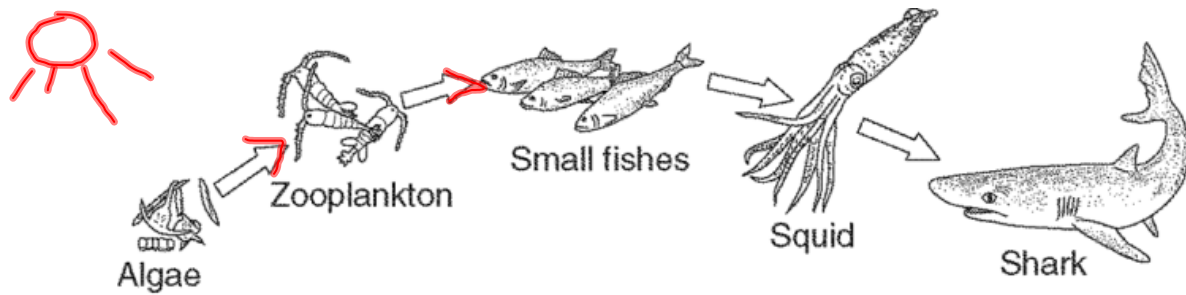
Heterotrophs - Organisms that rely on other organisms for energy and food.

- Herbivores: Eat only plants
(cows, caterpillars, deer)
- Carnivores: Eat animals
(snakes, dogs, owls)
- Omnivores: eat plants and animals
(humans, bears, crows)
- Detritivores: Feed on plant and animal remains and other dead matter.
(mites, earthworms, snails, crabs)
- Decomposers: Break down organic matter
(bacteria, fungi)

Food Chain

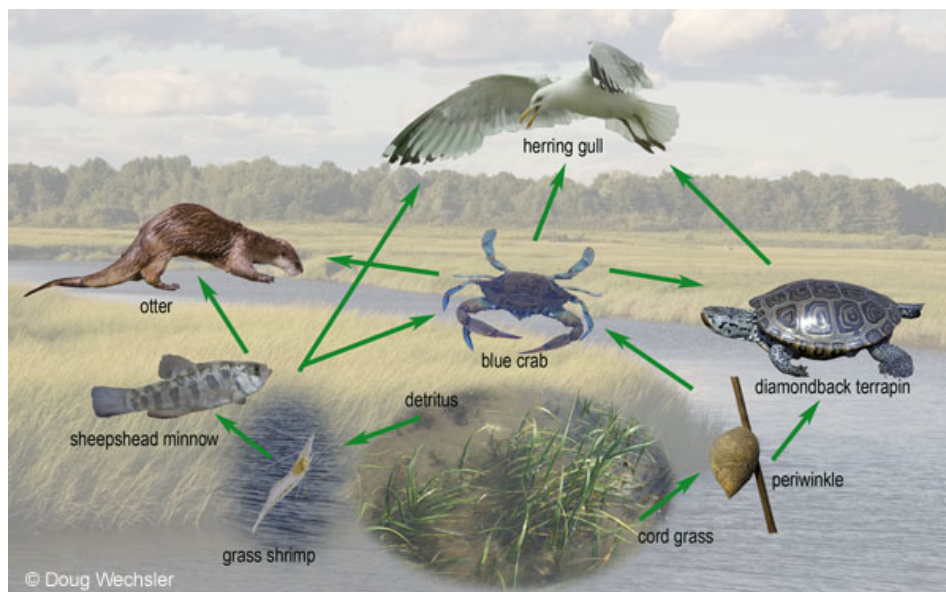
Series of steps in which organisms transfer energy by eating and being eaten.

Food chains show the one way flow of energy in an ecosystem.

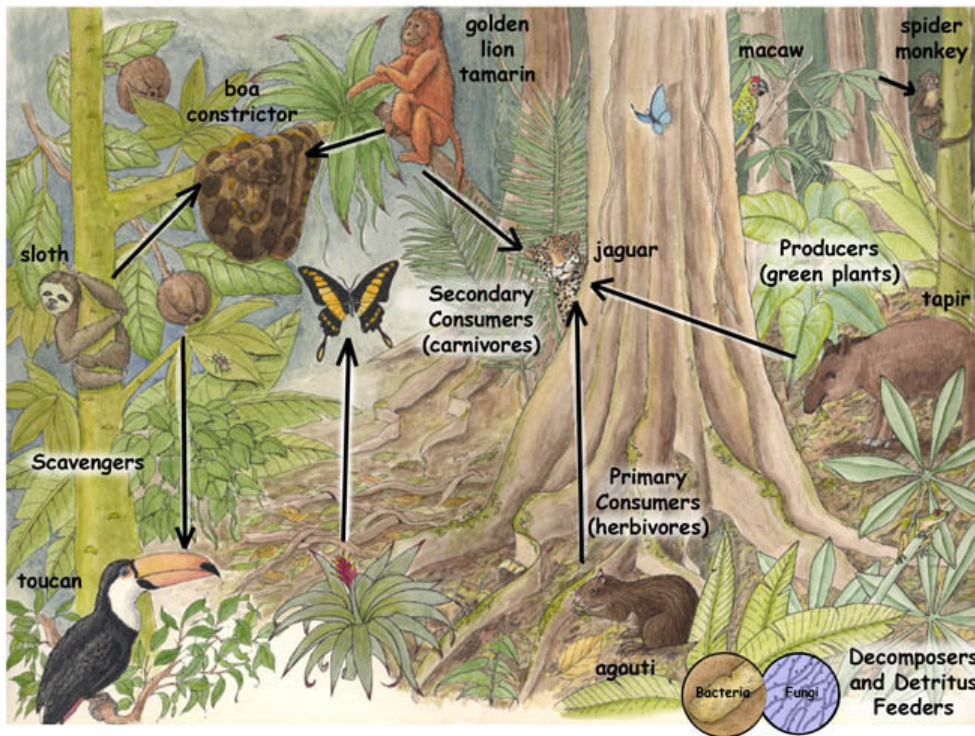


Food Web

A food web shows the interconnectedness of all of the food chains in an ecosystem.



Amazon Rainforest Food Web



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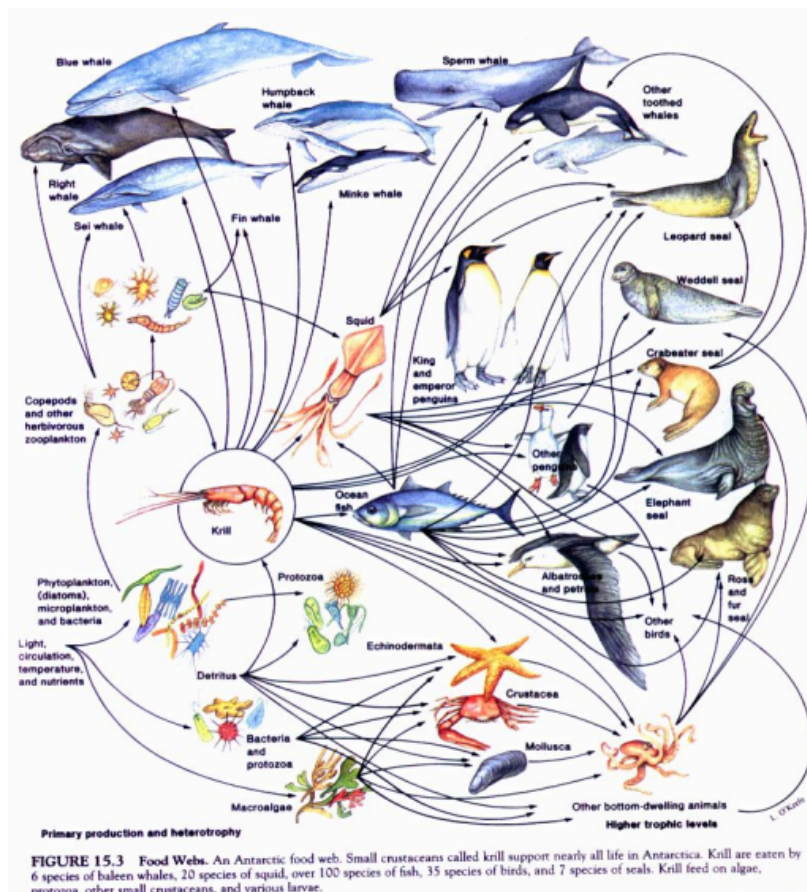


FIGURE 15.3 Food Webs. An Antarctic food web. Small crustaceans called krill support nearly all life in Antarctica. Krill are eaten by 6 species of baleen whales, 20 species of squid, over 100 species of fish, 35 species of birds, and 7 species of seals. Krill feed on algae, protozoa, other small crustaceans, and various larvae.